2.11 Roadway

2.11.1 *General*

The Design-Builder shall perform all Work necessary to complete the roadway design and grading elements for the Project.

2.11.2 *Mandatory Standards*

The following is a list of Mandatory Standards that shall be followed for all design and construction related to this Section as referenced in TR Section 2.2, *Mandatory Standards*.

1. Special Provisions (Appendix 4)
2. Standard Specifications M 41-10 (Appendix 4)
3. WSDOT *Design Manual* M 22-01 (Appendix 4)
4. WSDOT *Standard Plans* M 21-01 (Appendix 4)
5. *Project Delivery Memo #16-03 – MASH Implementation* (Appendix 4)
6. WSDOT *Plans Preparation Manual* M 22-31 (Appendix 4)
7. WSDOT *Local Agency Guidelines* M 36-63 (Appendix 4)
8. WSDOT *Traffic Manual* M 51-02 (Appendix 4)
9. *Washington State Modifications to the Manual on Uniform Traffic Control Devices* (WAC 468-95) (Appendix 4)
10. *FHWA Manual on Uniform Traffic Control Devices for Streets and Highways*, 2009 Edition with Revisions 1 & 2 dated May 2012 (Appendix 4)
11. Not Used
12. Not Used
13. *AASHTO A Policy on Geometric Design of Highway and Streets*
14. Not Used
15. *AASHTO Roadside Design Guide*
16. *US Access Board ADA Accessibility Guidelines for Buildings and Facilities* (ADAAG)
17. *AASHTO Guide for the Development of Bicycle Facilities*
18. *AASHTO Guide for the Planning, Design, and Operation of Pedestrian Facilities*
19. *U.S. Access Board Revised Draft Guidelines for Accessible Public Rights-of-Way,* November 2005 (Appendix 4)
20. *FHWA Flexibility in Highway Design* (Appendix 4)

21. *Qualified Products List* (QPL) (https://www.wsdot.wa.gov/Business/MaterialsLab/QPL.htm)

2.11.3 *Design Requirements*

2.11.3.1 Design Criteria

- ***To be determined during the Phase 1 Services Period*** **[Note: This paragraph will be updated as part of the Project GMP Bundle Amendment.]**

2.11.3.2 Roadside Barrier Selection

All traffic barriers incorporated into the Project shall be in accordance with the WSDOT *Design Manual*, and the WSDOT *Standard Plans*.

Existing traffic barrier that is within the work footprint of the proposed design shall be evaluated for need and shall be relocated, replaced, or removed as required in accordance with the WSDOT *Design Manual*. Traffic Barriers that are within the work footprint of the proposed design, but not impacted by that design, including Existing Type 3 and Type 1 guardrail, high tension cable barrier, and Type 2, Type F, and single slope concrete barrier, may be left in place if in undamaged performance-level condition. Traffic Barriers on a continuous-length project, such as a paving project, shall be evaluated and addressed in accordance with the WSDOT the Design Manual.

Each approach end of concrete barrier shall be treated with an impact attenuator.

Concrete barriers, barrier integral to, or embedded cast-in-place barriers shall be installed to mitigate clear-zone hazards associated with retaining walls.

2.11.3.2.1 Walls and Barriers along Right of Way

Where there is a retaining wall along the Right of Way (ROW) within 12 feet of vehicle access such as parking, driveways, or streets, the Design-Builder shall provide a concrete barrier to prevent vehicles from going over the top of the wall, to protect the wall from damage, and to redirect errant vehicles.

Where the top of a concrete barrier is below the top of a retaining wall or noise wall, the concrete barrier shall be placed as close to the wall as possible, and any gaps between the concrete barrier and wall shall be filled with concrete to the top of the concrete barrier. Where the top of the concrete barrier is above the top of a retaining wall or noise wall, the concrete barrier shall be cast integral with the wall, constructed on a moment slab, or offset a minimum of 2 feet from any part of the wall, coping, or cap.

Where the top of the concrete barrier and wall are less than 6 feet above the ground on the community side of the wall, then ROW fencing shall also be provided. The fencing shall be mounted to the top of the concrete barrier or wall, whichever is taller, in a manner that prevents trash, leaves, or other debris from collecting between the fencing and the concrete barrier or wall.

2.11.3.3 Impact Attenuators

All impact attenuators shall be SCI 100GM or SCI 70GM for permanent applications and shall be designed in accordance with the WSDOT *Design Manual*.

If the Design-Builder determines that the system referenced above does not meet the design requirements for the proposed application, the Design-Builder shall submit an impact attenuator technical memorandum to the WSDOT Engineer for Review and Comment prior to construction.

2.11.3.4 Fencing

Existing fencing along the limited access line that is disturbed or displaced by construction shall be repaired by the Design-Builder in accordance with the WSDOT *Design Manual* and the WSDOT *Standard Plans*.

2.11.3.5 Fall Protection

Fall protection shall be provided in accordance with the WSDOT *Design Manual*.

2.11.3.6 Side Slopes

Side slopes shall be in accordance with Chapter 1239 of the WSDOT *Design Manual*. For cut slopes and fill slopes behind traffic barrier protecting fixed objects, the Design-Builder shall submit a technical memorandum in accordance with TR Section 2.12, *Project Documentation*, to provide the written justification for sides slopes steeper than 3:1 discussed in Chapter 1239 of the WSDOT *Design Manual*. The Design-Builder shall submit a Design Analysis in accordance with TR Section 2.12, *Project Documentation*, for all other side slopes not meeting the requirements of the WSDOT *Design Manual*. The technical memorandum shall be submitted to the WSDOT Engineer for Review and Comment prior to construction.

Side slopes shall be summarized in a side slope table on the construction Drawings that shall identify the alignment, station range, and the side slope applied.

2.11.3.7 Maintenance Access

Access requirements for facilities constructed by the Project are addressed in the applicable Sections. All existing maintenance access roads shall remain in place unless impacted by construction of permanent Work. Temporarily impacted maintenance access roads shall be restored to their original condition.

2.11.3.8 Break in Limited Access

This section has been intentionally omitted.

2.11.3.9 Channelization Design

With respect to the number of lanes and storage lengths at each fish barrier location, the existing configurations shall be the minimum, unless otherwise specified during Phase 1 Services. The Design-Builder may propose reductions in these characteristics of the design in accordance with TR Section 2.21, *Traffic Operations*. WSDOT's determination to accept or reject such proposals will be in its sole discretion and such determinations are not subject to the disputes resolution process otherwise provided under the PDB Contract.

2.11.3.10 Pedestrian Facilities

All existing pedestrian facilities impacted by the Project, including, but not limited, to sidewalks, sidewalk ramps, accessible routes, bridges, driveways, and crossings, shall be evaluated to confirm that they meet the requirements of the WSDOT *Design Manual*. Existing pedestrian facilities that do not meet the requirements of the WSDOT *Design Manual* shall be modified to meet current WSDOT standards to the maximum extent feasible.

2.11.3.11 Noise Walls

This section has been intentionally omitted.

2.11.3.12 Rumble Strips

Existing rumble strips removed during construction shall be replaced in kind, in accordance with section 8-08 of the Standard Specification.

2.11.3.13 Removal of Structures and Obstructions

The Design Builder shall remove existing drainage structures within the excavation not associated with streams in accordance with TR Section 2.14, *Hydraulics*. The Design Builder shall remove existing stream culverts within the excavation in accordance with TR Section 2.30, *Fish Passage*. Other existing manmade structures within the excavation shall be removed in accordance with Division 2 and 7 of the Standard Specifications.

2.11.4 *Submittals*

2.11.4.1 Roadway Package

The Design-Builder shall prepare plan sheets for the Project in accordance with TR Section 2.28, *Quality Management Plan,* and the Mandatory Standards. The roadway package design submittal shall include, at a minimum, the following Plans:

- Index
- Vicinity Map
- Roadway Sections
- Alignment/ROW Plan

- Site Preparation
- Roadway Profiles
- Paving Plan
- Pavement Marking Plan

2.11.4.2 Design Parameter Worksheet

The Design-Builder shall conduct all Work necessary to update the design parameter worksheets should any revisions be necessary to the design criteria *established* pursuant to the Phase 1 Services at the time of the Culvert Bundle Amendment is entered into by the parties. The Design-Builder shall verify the information provided and update the design parameter worksheets to reflect the current design at the time of each submittal. The design parameter worksheets shall be checked according to the Quality Management Plan and shall be submitted to the WSDOT Engineer as part of the Project Development Approval for Review and Comment.

2.11.4.3 Roadside Barrier Technical Memorandum

The Design-Builder shall prepare and submit a technical memorandum to the WSDOT Engineer for Review and Comment providing justification for need or removal of all existing and proposed roadside barrier. Prior to specifying a barrier to mitigate a roadside condition, the Design-Builder shall analyze tradeoffs associated with the mitigation of the roadside condition that triggered the need for a barrier (specifically why the condition was either not removed, relocated, or redesigned as described in Section 1600.01 of the WSDOT *Design Manual*). The technical memorandum shall include the following:

- Description of the roadside condition being mitigated by the barrier, including a narrative description of the tradeoffs analyzed in rejecting alternatives to barrier, the design clear zone distance, dimensions, station, offset, and narrative description
- Barrier length of need calculation
- Plan layout of barrier including beginning and ending stations, offset, required grading, terminal type, and barrier type
- Narrative justification for removal of any existing roadside barrier

2.11.4.4 Impact Attenuator Technical Memorandum

The Design-Builder shall prepare and submit a technical memorandum to the WSDOT Engineer for Review and Comment when using a system other than the SCI 100GM or SCI 70GM for permanent applications. The technical memorandum shall include the following:

- Attenuator location

- Proposed substitution, including justification describing the attributes of the proposed attenuator that makes it the best product for the intended application
- Specific design rationale describing why one of the systems referenced above is not applicable

Acceptance will be at the WSDOT Engineer's sole discretion.

The design and written justification shall be revised based on comments received during the WSDOT Engineer's Review and Comment.

2.11.4.5 Clear Zone Inventory

The Clear Zone Inventory shall be completed prior to the start of construction and updated to reflect all changes from the Project. The Clear Zone Inventory shall be prepared using the *Clear Zone Inventory Form* (Appendix 4) and Chapter 1600 of the WSDOT *Design Manual*. The Clear Zone Inventory shall be included within the Design Documentation Package.

2.11.4.6 Complete Streets

The following streets have been identified to be designed as Complete Streets:

1. ***[**Note: WSDOT has completed the Complete Streets Project Screening. The Complete Streets Alternatives Development analysis, Community Outreach, Alternative Selection and Design are to be completed as part of the Phase 1 Design Services.]** ***

For widths and locations of sidewalks, buffers, bicycle facilities, shared-use paths, crossings, and other roadway design elements, the configurations provided in the ***[To be determined during Phase 1 Design Services for each Culvert Site that requires Complete Streets]** *** shall be the minimum, unless otherwise specified. The Pedestrian Level of Traffic Stress (PLTS) shall be a maximum of ******[To be determined during Phase 1 Design Services for each Culvert Site that requires Complete Streets** ***. The Bicycle Level of Traffic Stress (BLTS) shall be a maximum of ******[To be determined during Phase 1 Design Services for each Culvert Site that requires Complete Streets**] ***. See Project Delivery Memo #22-03 – Complete Streets Implementation in Appendix 4.

2.11.4.7 Pedestrian Facilities Technical Summary

For all existing pedestrian facilities described in this Section, the Design-Builder shall prepare and submit a technical summary to the WSDOT Engineer for Review and Comment, which outlines the pre-Project compliance conditions of all pedestrian facilities. The technical summary shall include the location of each facility; the facility type (e.g., sidewalk, sidewalk ramp, pedestrian access route, bridge, crossing, pedestrian push buttons, Utility lids, etc.); the pre-Project status (meets/does not meet criteria); mitigation required; photos; drawings; and worksheets similar to the ones provided in the *Maximum Extent Feasible*

Template and *the Maximum Extent Feasible Example and Worksheets* (Appendix 4).

2.11.5 *Miscellaneous Submittals*

At the request of the WSDOT Engineer, the Design-Builder shall deliver to the WSDOT Engineer Work-related submittals that do not fit in the previous categories but are prepared in accordance with this Section.

End of Section